



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/747,731

12/22/2000

Shunpei Yamazaki

SEL 233

4617

24628

7590

06/16/2010

Husch Blackwell Sanders, LLP

Husch Blackwell Sanders LLP Welsh & Katz

120 S RIVERSIDE PLAZA

22ND FLOOR

CHICAGO, IL 60606

EXAMINER

FLETCHER III, WILLIAM P

ART UNIT

PAPER NUMBER

1715

MAIL DATE

DELIVERY MODE

06/16/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/747,731	Applicant(s) YAMAZAKI ET AL.	
	Examiner William P. Fletcher III	Art Unit 1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-40,43,48,53-62,64-69,71,72,75-80,105-122,145-155 and 157-162 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-40,43,48,53-62,64-69,71,72,75-80,105-122,145-155 and 157-162 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/4/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4 May 2010 has been entered.

Response to Amendment

2. Claims 37-40, 43, 48, 53-62, 64-69, 71, 72, 75-80, 105-122, 145-155, and 157-162, remain pending.

Response to Arguments

3. Applicant argues that the cited art neither teaches nor renders obvious deposition material from a first source and a second source in the same chamber, wherein the first material and the second material are different material. The Examiner disagrees and maintains that the length record is clear as a whole. While it does appear that Arai would limit the deposition process such that one material is deposited per chamber, it has also been established in the record that it is well-known in the art of coating substrates to repeat a coating step the number of times required to build up a coating of a desired thickness and that such repeated coating would have been readily obvious to one skilled in the art. To the extent that such a build-up of thickness would require additional coating material (a "refill," so-to-speak) it would have been readily obvious to

Art Unit: 1715

one skilled in the art to switch out the sources so as to provide different charges of deposition material. Further, the phrase *different material* is very broad and may be interpreted in a variety of ways. In the above scenario obvious to one of ordinary skill in the art, each charge of material is deposited at a different time than the other, thereby reading on different materials. Further, the first charge of material is deposited closer to the substrate than a subsequent charge, thereby reading on different materials. There is nothing in the claim or otherwise of record requiring the Examiner to interpret the phrase *different material* as necessarily meaning *compositionally different*.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1715

6. *Claims 37, 43, 48, 53, 64, 75, and 157, are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), and Nagayama et al. (US 5,701,055 A).*

Arai is applied herein again as in connection with previously pending claims 20–22, 44, 45, 48, 63, 70, 74, and 156, set forth in the Office action mailed June 24, 2009. Arai does not place any limitations on the vapor deposition processes carried-out in the chambers.

Arai does not teach: (i) fixing a mask to the substrate wherein the mask is located between the substrate and the first evaporation source; (ii) that the first and second evaporation sources have a first direction longer than a second direction; or (iii) that the relative positions of the sources and the substrates are repeatedly moved during deposition so that a same portion of the substrate is coated with the organic EL material at least twice.

With respect to (i), Nagayama teaches a process for forming an electroluminescent device by vapor deposition of the various layers that includes fixing a shadow mask between the substrate and a deposition source in order to form the desired patterned structures on the substrate [8:42-62]. It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize a shadow mask in the claimed fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully forming the desired patterns of organic electroluminescent material on the substrate.

Art Unit: 1715

With respect to (ii), Grothe teaches that, when coating a substrate by vapor deposition, an evaporation source elongated in one dimension results in enhanced vapor density and deposition uniformity over the entire width of the substrate [c. 5, ll. 40 – 50 and 60 – 63]. It is the examiner's position that the source of Grothe reads on Appellant's source. It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize, as the evaporation source, the evaporation source of Grothe. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of achieving enhanced vapor density and deposition uniformity, as taught by Grothe.

With respect to (iii), Bennett teaches that, in a vacuum vapor deposition process, moving the evaporation source with respect to the substrate improves deposition speed and uniformity [c. 3, ll. 1 – 10]. It would have been further obvious to one of ordinary skill in the art to modify the method of Arai so as to move the evaporation source relative to the substrate, as taught by Bennett. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of improving deposition speed and uniformity.

None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so. It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the

Art Unit: 1715

greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

While it does appear that Arai would limit the deposition process such that one material is deposited per chamber, it has also been established in the record that it is well-known in the art of coating substrates to repeat a coating step the number of times required to build up a coating of a desired thickness and that such repeated coating would have been readily obvious to one skilled in the art. To the extent that such a build-up of thickness would require additional coating material (a "refill," so-to-speak) it would have been readily obvious to one skilled in the art to switch out the sources so as to provide different charges of deposition material. Further, the phrase *different material* is very broad and may be interpreted in a variety of ways. In the above scenario obvious to one of ordinary skill in the art, each charge of material is deposited at a different time than the other, thereby reading on different materials. Further, the first charge of material is deposited closer to the substrate than a subsequent charge, thereby reading on different materials. There is nothing in the claim or otherwise of record requiring the Examiner to interpret the phrase *different material* as necessarily meaning *compositionally different*.

With respect to claim 53, none of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of

Art Unit: 1715

a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

With respect to claim 64, it is the examiner's position that the shape and distribution of the film thickness is a physical characteristic inherently arising from shape and arrangement of the evaporation source. Since this combination of references otherwise teaches all of Appellant's other method limitations — including the shape and arrangement of the evaporation source(s) — it is the examiner's position that the deposited film inherently possesses the characteristics recited in this claim.

With respect to claim 75, none of the cited references explicitly states that the evaporation sources has a length exceeding 300 mm along the first direction. It is the examiner's position that, especially in view of the teaching of Grothe, it would have been obvious to one of ordinary skill in the art to select the elongated dimension of the source commensurate with the width of area to be covered. In other words, the length of the elongated dimension of the source is a result-effective variable effecting the degree of coverage and length of time of the overall coating process. The greater the area covered, the shorter the coating process. Consequently, it would have been obvious to one of ordinary skill in the art to optimize the length of the elongated dimension of the coating source by routine experimentation, absent evidence of criticality. See MPEP 2144.05.

With respect to claim 157, Arai places no limitation on the sort of EL device manufactured. Consequently, it is the Examiner's position that the disclosed process

Art Unit: 1715

may advantageously manufacture any desired EL device, including a passive matrix display.

7. *Claims 38, 48, 56, 65, 76, 153, and 158, are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), Nagayama et al. (US 5,701,055 A), and Monk (US 4,187,801 A).*

The combined teaching of Arai, Bennett, Grothe, and Nagayama is detailed above. None of the references teach that the evaporation sources are longer than at least one edge of the substrate. Monk teaches that, in a vapor deposition method, it is conventional to treat a larger area than covered by the substrate to avoid edge effects [c. 1, ll. 17 – 20]. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Bennett, and Grothe, so as to utilize an elongated source that is longer than at least one edge of the substrate. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of avoiding edge effects, as suggested by Monk.

None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so. It would have been further obvious, to one of ordinary skill in the art, to optimize the

Art Unit: 1715

orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

While it does appear that Arai would limit the deposition process such that one material is deposited per chamber, it has also been established in the record that it is well-known in the art of coating substrates to repeat a coating step the number of times required to build up a coating of a desired thickness and that such repeated coating would have been readily obvious to one skilled in the art. To the extent that such a build-up of thickness would require additional coating material (a "refill," so-to-speak) it would have been readily obvious to one skilled in the art to switch out the sources so as to provide different charges of deposition material. Further, the phrase *different material* is very broad and may be interpreted in a variety of ways. In the above scenario obvious to one of ordinary skill in the art, each charge of material is deposited at a different time than the other, thereby reading on different materials. Further, the first charge of material is deposited closer to the substrate than a subsequent charge, thereby reading on different materials. There is nothing in the claim or otherwise of record requiring the Examiner to interpret the phrase *different material* as necessarily meaning *compositionally different*.

With respect to claim 53, none of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of

Art Unit: 1715

a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

With respect to claim 65, it is the examiner's position that the shape and distribution of the film thickness is a physical characteristic inherently arising from shape and arrangement of the evaporation source. Since this combination of references otherwise teaches all of Appellant's other method limitations — including the shape and arrangement of the evaporation source(s) — it is the examiner's position that the deposited film inherently possesses the characteristics recited in this claim.

With respect to claim 76, none of the cited references explicitly states that the evaporation sources has a length exceeding 300 mm along the first direction. It is the examiner's position that, especially in view of the teaching of Grothe, it would have been obvious to one of ordinary skill in the art to select the elongated dimension of the source commensurate with the width of area to be covered. In other words, the length of the elongated dimension of the source is a result-effective variable effecting the degree of coverage and length of time of the overall coating process. The greater the area covered, the shorter the coating process. Consequently, it would have been obvious to one of ordinary skill in the art to optimize the length of the elongated dimension of the coating source by routine experimentation, absent evidence of criticality. See MPEP 2144.05.

With respect to claim 153, as noted above, the claimed relative movement would have been obvious based on the teaching of Bennett.

With respect to claim 158, Arai places no limitation on the sort of EL device manufactured. Consequently, it is the Examiner's position that the disclosed process may advantageously manufacture any desired EL device, including a passive matrix display.

8. *Claim 39, 48, 53, 57, 66, 77, and 159, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent).*

Arai is applied herein again as in connection with previously pending claims 20–22, 44, 45, 48, 63, 70, 74, and 156, set forth in the Office action mailed June 24, 2009. Arai does not place any limitations on the vapor deposition processes carried-out in the chambers.

Arai does not teach fixing a mask to the substrate wherein the mask is located between the substrate and the first evaporation source. Nagayama teaches a process for forming an electroluminescent device by vapor deposition of the various layers that includes fixing a shadow mask between the substrate and a deposition source in order to form the desired patterned structures on the substrate (8:42-62). It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize a shadow mask in the claimed fashion. One of ordinary skill in the art would have been

Art Unit: 1715

motivated to do so by the desire and expectation of successfully forming the desired patterns of organic electroluminescent material on the substrate.

Arai does not teach that first and second evaporation sources comprise a plurality of evaporation cells arranged along a first direction or that the relative positions of the sources are repeatedly moved with respect to the substrate during deposition so that a same portion of the substrate is coated at least twice. Feuerstein teaches a method of coating a substrate utilizing a vacuum evaporator comprising an elongated array of individually controllable vapor sources [c. 1, ll. 21 - 24; c. 2, ll. 40 - 45; c. 4, ll. 55 - 57; and c. 6, ll. 18 - 26]. Such a source facilitates greater control over deposition thickness and uniformity [c. 2, ll. 41 - 45]. It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize an evaporation source comprising a plurality of evaporation cells arranged along a first direction so as to achieve greater control over deposition thickness and uniformity, as suggested by Feuerstein.

It would have been further obvious to move the relative position of this source with respect to the substrate during evaporation. Bennett teaches that moving the source with respect to the substrate improves deposition speed and uniformity [see above]. Specifically moving the source instead of the substrate is considered advantageous because it requires a smaller vacuum chamber [c. 3, l. 72 - c. 4, l. 3].

None of the cited references teach coating the same portion of substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the

Art Unit: 1715

number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

It would have been obvious to one of ordinary skill in the art to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

Lastly, none of the cited references teach Appellant's limitation requiring "cleaning an inside of the evaporation chamber." Yamamoto teaches that, in the vapor deposition of organic thin films for EL devices, it is conventional to clean the parts equipped in each chamber and the inside wall of the chambers after every deposition on the substrate (2:23-27). Doing so prevents contamination of the substrate by residual organic material having a tendency to peel-off of the chamber surfaces (2:63-3:8). Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to perform the conventional step of cleaning the deposition chamber. One of ordinary skill would have been motivated to do so by the desire and expectation of preventing contamination of the substrate.

The examiner notes that the body of Yamamoto's disclosure is directed to a method in which an additional set of cleaned parts is provided in each chamber, thereby eliminating the need to clean after each step, thereby saving time (5:45-8:30). Consequently, in the alternative, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to provide an

Art Unit: 1715

additional set of cleaned parts to eliminate the need for repeated cleaning. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of reducing the processing time. The parts still need to be cleaned at some point, either before, during, or after the deposition process. Consequently, Yamamoto's invention also reads on Appellant's claimed "cleaning an inside of the evaporation chamber."

While it does appear that Arai would limit the deposition process such that one material is deposited per chamber, it has also been established in the record that it is well-known in the art of coating substrates to repeat a coating step the number of times required to build up a coating of a desired thickness and that such repeated coating would have been readily obvious to one skilled in the art. To the extent that such a build-up of thickness would require additional coating material (a "refill," so-to-speak) it would have been readily obvious to one skilled in the art to switch out the sources so as to provide different charges of deposition material. Further, the phrase *different material* is very broad and may be interpreted in a variety of ways. In the above scenario obvious to one of ordinary skill in the art, each charge of material is deposited at a different time than the other, thereby reading on different materials. Further, the first charge of material is deposited closer to the substrate than a subsequent charge, thereby reading on different materials. There is nothing in the claim or otherwise of record requiring the Examiner to interpret the phrase *different material* as necessarily meaning *compositionally different*.

Art Unit: 1715

With respect to claim 53, none of the cited references teach coating the same portion of substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

With respect to claim 66, it is the examiner's position that the shape and distribution of the film thickness is a physical characteristic inherently arising from shape and arrangement of the evaporation source. Since this combination of references otherwise teaches all of Appellant's other method limitations — including the shape and arrangement of the evaporation source(s) — it is the examiner's position that the deposited film inherently possesses the characteristics recited in this claim.

With respect to claim 77, none of the cited references explicitly states that the evaporation sources has a length exceeding 300 mm along the first direction. It is the examiner's position that, especially in view of the teaching of Grothe, it would have been obvious to one of ordinary skill in the art to select the elongated dimension of the source commensurate with the width of area to be covered. In other words, the length of the elongated dimension of the source is a result-effective variable effecting the degree of coverage and length of time of the overall coating process. The greater the area covered, the shorter the coating process. Consequently, it would have been obvious to one of ordinary skill in the art to optimize the length of the elongated dimension of the coating source by routine experimentation, absent evidence of criticality. See MPEP 2144.05.

With respect to claim 159, Arai places no limitation on the sort of EL device manufactured. Consequently, it is the Examiner's position that the disclosed process may advantageously manufacture any desired EL device, including a passive matrix display.

9. *Claim 40, 48, 58, 67, 78, 154, and 160, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent) or, in the alternative, over Arai et al., in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al., Bennett, Monk (US 4,187,801 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent).*

The combined teaching of Arai, Nagayama, Feuerstein, and Bennett is detailed above. Additionally, Feuerstein illustrates, but does not require, a source that is longer than at least one edge of the substrate [Fig. 1]. Nevertheless, it would have been obvious to utilize a source longer than at least one edge of the substrate to avoid edge effects, as taught by Monk [see above].

It would have been further obvious to move the relative position of this source with respect to the substrate during evaporation. Bennett teaches that moving the source with respect to the substrate improves deposition speed and uniformity [see

Art Unit: 1715

above]. Specifically moving the source instead of the substrate is considered advantageous because it requires a smaller vacuum chamber [c. 3, l. 72 - c. 4, l. 3].

None of the cited references teach coating the same portion of substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

It would have been obvious to one of ordinary skill in the art to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

Lastly, none of the cited references teach Appellant's newly-added limitation requiring "cleaning an inside of the evaporation chamber." Yamamoto teaches that, in the vapor deposition of organic thin films for EL devices, it is conventional to clean the parts equipped in each chamber and the inside wall of the chambers after every deposition on the substrate (2:23-27). Doing so prevents contamination of the substrate by residual organic material having a tendency to peel-off of the chamber surfaces (2:63-3:8). Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to perform the conventional step of cleaning the deposition chamber. One of ordinary skill would have been motivated to do so by the desire and expectation of preventing contamination of the substrate.

Art Unit: 1715

The examiner notes that the body of Yamamoto's disclosure is directed to a method in which an additional set of cleaned parts is provided in each chamber, thereby eliminating the need to clean after each step, thereby saving time (5:45-8:30). Consequently, in the alternative, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to provide an additional set of cleaned parts to eliminate the need for repeated cleaning. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of reducing the processing time. The parts still need to be cleaned at some point, either before, during, or after the deposition process. Consequently, Yamamoto's invention also reads on Appellant's claimed "cleaning an inside of the evaporation chamber."

While it does appear that Arai would limit the deposition process such that one material is deposited per chamber, it has also been established in the record that it is well-known in the art of coating substrates to repeat a coating step the number of times required to build up a coating of a desired thickness and that such repeated coating would have been readily obvious to one skilled in the art. To the extent that such a build-up of thickness would require additional coating material (a "refill," so-to-speak) it would have been readily obvious to one skilled in the art to switch out the sources so as to provide different charges of deposition material. Further, the phrase *different material* is very broad and may be interpreted in a variety of ways. In the above scenario obvious to one of ordinary skill in the art, each charge of material is deposited at a different time than the other, thereby reading on different materials. Further, the first charge of

Art Unit: 1715

material is deposited closer to the substrate than a subsequent charge, thereby reading on different materials. There is nothing in the claim or otherwise of record requiring the Examiner to interpret the phrase *different material* as necessarily meaning *compositionally different*.

With respect to claim 67, it is the examiner's position that the shape and distribution of the film thickness is a physical characteristic inherently arising from shape and arrangement of the evaporation source. Since this combination of references otherwise teaches all of Appellant's other method limitations — including the shape and arrangement of the evaporation source(s) — it is the examiner's position that the deposited film inherently possesses the characteristics recited in this claim.

With respect to claim 78, none of the cited references explicitly states that the evaporation sources has a length exceeding 300 mm along the first direction. It is the examiner's position that, especially in view of the teaching of Grothe, it would have been obvious to one of ordinary skill in the art to select the elongated dimension of the source commensurate with the width of area to be covered. In other words, the length of the elongated dimension of the source is a result-effective variable effecting the degree of coverage and length of time of the overall coating process. The greater the area covered, the shorter the coating process. Consequently, it would have been obvious to one of ordinary skill in the art to optimize the length of the elongated dimension of the coating source by routine experimentation, absent evidence of criticality. See MPEP 2144.05.

Art Unit: 1715

With respect to claim 154, as noted above, the claimed relative movement would have been obvious based on the teaching of Bennett.

With respect to claim 160, Arai places no limitation on the sort of EL device manufactured. Consequently, it is the Examiner's position that the disclosed process may advantageously manufacture any desired EL device, including a passive matrix display.

10. *Claims 54, 68, 71, 79, and 161, are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent).*

Arai is applied herein again as in connection with previously pending claims 20–22, 44, 45, 48, 63, 70, 74, and 156, set forth in the Office action mailed June 24, 2009. Arai does not place any limitations on the vapor deposition processes carried-out in the chambers.

Arai does not teach fixing a mask to the substrate wherein the mask is located between the substrate and the first evaporation source. Nagayama teaches a process for forming an electroluminescent device by vapor deposition of the various layers that includes fixing a shadow mask between the substrate and a deposition source in order to form the desired patterned structures on the substrate (8:42-62). It would have been

Art Unit: 1715

obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize a shadow mask in the claimed fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully forming the desired patterns of organic electroluminescent material on the substrate.

Arai does not teach that the first and second evaporation sources have a first direction longer than a second direction or that the relative positions of the sources and the substrates are repeatedly moved during deposition so that a same portion of the substrate is coated with the organic EL material at least twice. Grothe teaches that, when coating a substrate by vapor deposition, an evaporation source elongated in one dimension results in enhanced vapor density and deposition uniformity over the entire width of the substrate [c. 5, ll. 40 – 50 and 60 – 63]. It is the examiner's position that the source of Grothe reads on Appellant's source. It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize, as the evaporation source, the evaporation source of Grothe. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of achieving enhanced vapor density and deposition uniformity, as taught by Grothe.

Bennett teaches that, in a vacuum vapor deposition process, moving the evaporation source with respect to the substrate improves deposition speed and uniformity [c. 3, ll. 1 – 10]. It would have been further obvious to one of ordinary skill in the art to modify the method of Arai so as to move the evaporation source relative to the substrate, as taught by Bennett. One of ordinary skill in the art would have been

Art Unit: 1715

motivated to do so by the desire and expectation of improving deposition speed and uniformity.

None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

Lastly, none of the cited references teach Appellant's newly-added limitation requiring "cleaning an inside of the evaporation chamber." Yamamoto teaches that, in the vapor deposition of organic thin films for EL devices, it is conventional to clean the parts equipped in each chamber and the inside wall of the chambers after every deposition on the substrate (2:23-27). Doing so prevents contamination of the substrate by residual organic material having a tendency to peel-off of the chamber surfaces (2:63-3:8). Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to perform the conventional step of cleaning the deposition chamber. One of ordinary skill would have been motivated to do so by the desire and expectation of preventing contamination of the substrate.

Art Unit: 1715

The examiner notes that the body of Yamamoto's disclosure is directed to a method in which an additional set of cleaned parts is provided in each chamber, thereby eliminating the need to clean after each step, thereby saving time (5:45-8:30). Consequently, in the alternative, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to provide an additional set of cleaned parts to eliminate the need for repeated cleaning. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of reducing the processing time. The parts still need to be cleaned at some point, either before, during, or after the deposition process. Consequently, Yamamoto's invention also reads on Appellant's claimed "cleaning an inside of the evaporation chamber."

While it does appear that Arai would limit the deposition process such that one material is deposited per chamber, it has also been established in the record that it is well-known in the art of coating substrates to repeat a coating step the number of times required to build up a coating of a desired thickness and that such repeated coating would have been readily obvious to one skilled in the art. To the extent that such a build-up of thickness would require additional coating material (a "refill," so-to-speak) it would have been readily obvious to one skilled in the art to switch out the sources so as to provide different charges of deposition material. Further, the phrase *different material* is very broad and may be interpreted in a variety of ways. In the above scenario obvious to one of ordinary skill in the art, each charge of material is deposited at a different time than the other, thereby reading on different materials. Further, the first charge of

Art Unit: 1715

material is deposited closer to the substrate than a subsequent charge, thereby reading on different materials. There is nothing in the claim or otherwise of record requiring the Examiner to interpret the phrase *different material* as necessarily meaning *compositionally different*.

With respect to claim 68, it is the examiner's position that the shape and distribution of the film thickness is a physical characteristic inherently arising from shape and arrangement of the evaporation source. Since this combination of references otherwise teaches all of Appellant's other method limitations — including the shape and arrangement of the evaporation source(s) — it is the examiner's position that the deposited film inherently possesses the characteristics recited in this claim.

With respect to claim 79, none of the cited references explicitly states that the evaporation sources has a length exceeding 300 mm along the first direction. It is the examiner's position that, especially in view of the teaching of Grothe, it would have been obvious to one of ordinary skill in the art to select the elongated dimension of the source commensurate with the width of area to be covered. In other words, the length of the elongated dimension of the source is a result-effective variable effecting the degree of coverage and length of time of the overall coating process. The greater the area covered, the shorter the coating process. Consequently, it would have been obvious to one of ordinary skill in the art to optimize the length of the elongated dimension of the coating source by routine experimentation, absent evidence of criticality. See MPEP 2144.05.

Art Unit: 1715

With respect to claim 161, Arai places no limitation on the sort of EL device manufactured. Consequently, it is the Examiner's position that the disclosed process may advantageously manufacture any desired EL device, including a passive matrix display.

11. *Claims 55, 69, 72, 80, 155, and 162, are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), Monk (US 4,187,801 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent).*

The combined teaching of Arai, Nagayama, Bennett, and Grothe is detailed above. None of the references teach that the evaporation sources are longer than at least one edge of the substrate. Monk teaches that, in a vapor deposition method, it is conventional to treat a larger area than covered by the substrate to avoid edge effects [c. 1, ll. 17 – 20]. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Nagayama, Bennett, and Grothe, so as to utilize an elongated source that is longer than at least one edge of the substrate. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of avoiding edge effects, as suggested by Monk.

None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating

Art Unit: 1715

step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

Lastly, none of the cited references teach Appellant's limitation requiring "cleaning an inside of the evaporation chamber." Yamamoto teaches that, in the vapor deposition of organic thin films for EL devices, it is conventional to clean the parts equipped in each chamber and the inside wall of the chambers after every deposition on the substrate (2:23-27). Doing so prevents contamination of the substrate by residual organic material having a tendency to peel-off of the chamber surfaces (2:63-3:8). Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to perform the conventional step of cleaning the deposition chamber. One of ordinary skill would have been motivated to do so by the desire and expectation of preventing contamination of the substrate.

The examiner notes that the body of Yamamoto's disclosure is directed to a method in which an additional set of cleaned parts is provided in each chamber, thereby eliminating the need to clean after each step, thereby saving time (5:45-8:30). Consequently, in the alternative, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Feuerstein, and Bennett so as to provide an

Art Unit: 1715

additional set of cleaned parts to eliminate the need for repeated cleaning. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of reducing the processing time. The parts still need to be cleaned at some point, either before, during, or after the deposition process. Consequently, Yamamoto's invention also reads on Appellant's claimed "cleaning an inside of the evaporation chamber."

While it does appear that Arai would limit the deposition process such that one material is deposited per chamber, it has also been established in the record that it is well-known in the art of coating substrates to repeat a coating step the number of times required to build up a coating of a desired thickness and that such repeated coating would have been readily obvious to one skilled in the art. To the extent that such a build-up of thickness would require additional coating material (a "refill," so-to-speak) it would have been readily obvious to one skilled in the art to switch out the sources so as to provide different charges of deposition material. Further, the phrase *different material* is very broad and may be interpreted in a variety of ways. In the above scenario obvious to one of ordinary skill in the art, each charge of material is deposited at a different time than the other, thereby reading on different materials. Further, the first charge of material is deposited closer to the substrate than a subsequent charge, thereby reading on different materials. There is nothing in the claim or otherwise of record requiring the Examiner to interpret the phrase *different material* as necessarily meaning *compositionally different*.

Art Unit: 1715

With respect to claim 69, it is the examiner's position that the shape and distribution of the film thickness is a physical characteristic inherently arising from shape and arrangement of the evaporation source. Since this combination of references otherwise teaches all of Appellant's other method limitations — including the shape and arrangement of the evaporation source(s) — it is the examiner's position that the deposited film inherently possesses the characteristics recited in this claim.

With respect to claim 80, none of the cited references explicitly states that the evaporation sources has a length exceeding 300 mm along the first direction. It is the examiner's position that, especially in view of the teaching of Grothe, it would have been obvious to one of ordinary skill in the art to select the elongated dimension of the source commensurate with the width of area to be covered. In other words, the length of the elongated dimension of the source is a result-effective variable effecting the degree of coverage and length of time of the overall coating process. The greater the area covered, the shorter the coating process. Consequently, it would have been obvious to one of ordinary skill in the art to optimize the length of the elongated dimension of the coating source by routine experimentation, absent evidence of criticality. See MPEP 2144.05.

With respect to claim 155, as noted above, the claimed relative movement would have been obvious based on the teaching of Bennett.

With respect to claim 162, Arai places no limitation on the sort of EL device manufactured. Consequently, it is the Examiner's position that the disclosed process

Art Unit: 1715

may advantageously manufacture any desired EL device, including a passive matrix display.

12. *Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Bennett (US 2,435,997 A) and Grothe et al. (US 3,931,490 A), as applied to claim 37 above, further in view of Spitzer et al. (US 5,258,325 A).*

The teachings of all of the cited references are described above. None of these teach that the display device is an active matrix electroluminescence display device.

Spitzer et al. teach that it is the electrode arrangement that distinguishes an active matrix device. Consequently, it is the examiner's position that it would have been obvious to utilize the above-cited methods of depositing organic electroluminescent material to manufacture an active matrix electroluminescent display device. One of ordinary skill in the art would have been motivated by the expectation of successfully manufacturing an active matrix EL display device since the deposition of the organic EL material does not determine whether or not the matrix is active.

13. *Claim 60 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), and Monk (US 4,187,801 A), as applied to claim 38 above, further in view of Spitzer et al. (US 5,258,325 A).*

The teachings of all of the cited references are described above. None of these teach that the display device is an active matrix electroluminescence display device.

Spitzer et al. teach that it is the electrode arrangement that distinguishes an active matrix device. Consequently, it is the examiner's position that it would have been obvious to utilize the above-cited methods of depositing organic electroluminescent material to manufacture an active matrix electroluminescent display device. One of ordinary skill in the art would have been motivated by the expectation of successfully manufacturing an active matrix EL display device since the deposition of the organic EL material does not determine whether or not the matrix is active.

14. *Claim 61 rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5071,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 39 above, further in view of Spitzer et al. (US 5,258,325 A).*

The teachings of all of the cited references are described above. None of these teach that the display device is an active matrix electroluminescence display device.

Spitzer et al. teach that it is the electrode arrangement that distinguishes an active matrix device. Consequently, it is the examiner's position that it would have been obvious to utilize the above-cited methods of depositing organic electroluminescent

Art Unit: 1715

material to manufacture an active matrix electroluminescent display device. One of ordinary skill in the art would have been motivated by the expectation of successfully manufacturing an active matrix EL display device since the deposition of the organic EL material does not determine whether or not the matrix is active.

15. *Claim 62 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent) or, in the alternative, over Arai et al., in view of Nagayama et al., Feuerstein et al., Bennett, Monk (US 4,187,801 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 40 above, further in view of Spitzer et al. (US 5,258,325 A).*

The teachings of all of the cited references are described above. None of these teach that the display device is an active matrix electroluminescence display device.

Spitzer et al. teach that it is the electrode arrangement that distinguishes an active matrix device. Consequently, it is the examiner's position that it would have been obvious to utilize the above-cited methods of depositing organic electroluminescent material to manufacture an active matrix electroluminescent display device. One of ordinary skill in the art would have been motivated by the expectation of successfully

Art Unit: 1715

manufacturing an active matrix EL display device since the deposition of the organic EL material does not determine whether or not the matrix is active.

16. *Claims 105-107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), and Nagayama et al. (US 5,701,055 A), as applied to claim 37 above, further in view of Bertelsen (US 3,110,620 A).*

None of the cited references explicitly teach the features of these claims. Bertelsen teaches a process in which multiple layers (including transparent and conductive layers) are vapor deposited on a substrate, optionally via a mask, in which the substrate is situated above an evaporation coating source (Fig. 3 and 3:55-70). Consequently, it would have been obvious to one of ordinary skill in the art to modify the process of these references so as to arrange the substrate, mask, and coating source in this fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully coating the substrate.

17. *Claims 108-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), Nagayama et al. (US 5,701,055 A), and Monk (US 4,187,801 A), as applied to claim 38 above, further in view of Bertelsen (US 3,110,620 A).*

Art Unit: 1715

None of the cited references explicitly teach the features of these claims. Bertelsen teaches a process in which multiple layers (including transparent and conductive layers) are vapor deposited on a substrate, optionally via a mask, in which the substrate is situated above an evaporation coating source (Fig. 3 and 3:55-70). Consequently, it would have been obvious to one of ordinary skill in the art to modify the process of these references so as to arrange the substrate, mask, and coating source in this fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully coating the substrate.

18. *Claims 111-113 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 39 above, further in view of Bertelsen (US 3,110,620 A).*

None of the cited references explicitly teach the features of these claims. Bertelsen teaches a process in which multiple layers (including transparent and conductive layers) are vapor deposited on a substrate, optionally via a mask, in which the substrate is situated above an evaporation coating source (Fig. 3 and 3:55-70). Consequently, it would have been obvious to one of ordinary skill in the art to modify the process of these references so as to arrange the substrate, mask, and coating source in

Art Unit: 1715

this fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully coating the substrate.

19. *Claims 114-116 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent) or, in the alternative, over Arai et al., in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al., Bennett, Monk (US 4,187,801 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 340 above, further in view of Bertelsen (US 3,110,620 A).*

None of the cited references explicitly teach the features of these claims. Bertelsen teaches a process in which multiple layers (including transparent and conductive layers) are vapor deposited on a substrate, optionally via a mask, in which the substrate is situated above an evaporation coating source (Fig. 3 and 3:55-70). Consequently, it would have been obvious to one of ordinary skill in the art to modify the process of these references so as to arrange the substrate, mask, and coating source in this fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully coating the substrate.

Art Unit: 1715

20. *Claims 117-119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 54 above, further in view of Bertelsen (US 3,110,620 A).*

None of the cited references explicitly teach the features of these claims. Bertelsen teaches a process in which multiple layers (including transparent and conductive layers) are vapor deposited on a substrate, optionally via a mask, in which the substrate is situated above an evaporation coating source (Fig. 3 and 3:55-70). Consequently, it would have been obvious to one of ordinary skill in the art to modify the process of these references so as to arrange the substrate, mask, and coating source in this fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully coating the substrate.

21. *Claims 120-122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), Monk (US 4,187,801 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 55 above, further in view of Bertelsen (US 3,110,620 A).*

Art Unit: 1715

None of the cited references explicitly teach the features of these claims. Bertelsen teaches a process in which multiple layers (including transparent and conductive layers) are vapor deposited on a substrate, optionally via a mask, in which the substrate is situated above an evaporation coating source (Fig. 3 and 3:55-70). Consequently, it would have been obvious to one of ordinary skill in the art to modify the process of these references so as to arrange the substrate, mask, and coating source in this fashion. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully coating the substrate.

22. *Claims 145-148 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 39 above, further in view of either Noguchi et al. (US 4,596,735 A) or Martin (US 4,469,719 A).*

Arai, Nagayama, Feuerstein, Bennett, and Yamamoto are cited herein again as detailed above.

None of these references teaches the claimed source-mask distance.

Both Noguchi and Martin teach that the source-mask distance is a result-effective variable effecting various properties of the deposited film.

Art Unit: 1715

Consequently, it would have been obvious to one of ordinary skill in the art, absent evidence of criticality, to optimize this distance by routine experimentation. See MPEP 2144.05.

23. *Claims 149-152 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent) or, in the alternative, over Arai et al., in view of Nagayama et al. (US 5,701,055 A), Feuerstein et al., Bennett, Monk (US 4,187,801 A), and Yamamoto et al. (JP 11-61386 A, US 6,179,923 B1 provided as English-language equivalent), as applied to claim 40 above, further in view of either Noguchi et al. (US 4,596,735 A) or Martin (US 4,469,719 A).*

Arai, Nagayama, Feuerstein, Bennett, Monk, and Yamamoto are cited herein again as detailed above.

None of these references teaches the claimed source-mask distance.

Both Noguchi and Martin teach that the source-mask distance is a result-effective variable effecting various properties of the deposited film.

Consequently, it would have been obvious to one of ordinary skill in the art, absent evidence of criticality, to optimize this distance by routine experimentation. See MPEP 2144.05.

Art Unit: 1715

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (571) 272-1419. The examiner can normally be reached on Sunday, 5:00 AM - 12:00 PM and Monday through Friday, 5:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William Phillip Fletcher III/
Primary Examiner, Art Unit 1715

14 June 2010